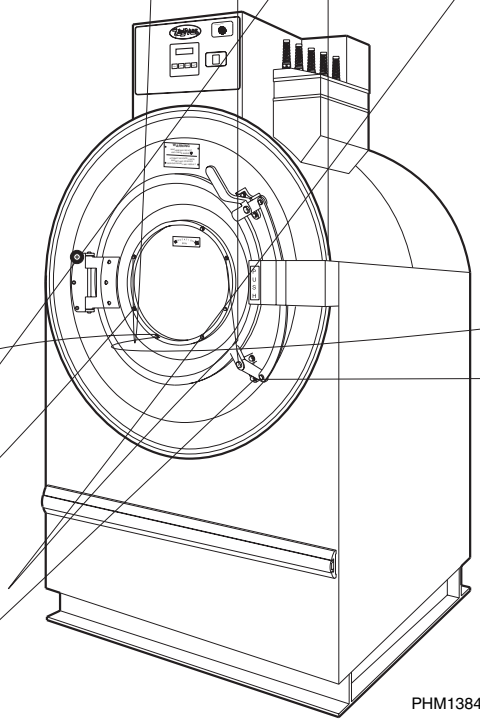
Washer-Extractors

Pocket Hardmount

Variable Speed
V-Series Microcomputer
Refer to Page 7 for Model Identification

Operation/Maintenance



PHM1384C

Keep These Instructions for Future Reference.
(If this machine changes ownership, this manual must accompany machine.)

Alliance Laundry Systems

www.comlaundry.com

Part No. F232183R1
March 2006

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Notes

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Safety Information

Explanation of Safety Messages

Precautionary statements (“DANGER,” “WARNING,” and “CAUTION”), followed by specific instructions, are found in this manual and on machine decals. These precautions are intended for the personal safety of the operator, user, servicer, and those maintaining the machine.

DANGER

DANGER indicates the presence of a hazard that will cause severe personal injury, death, or substantial property damage if the danger is ignored.

WARNING

WARNING indicates the presence of a hazard that can cause severe personal injury, death, or substantial property damage if the warning is ignored.

CAUTION

CAUTION indicates the presence of a hazard that will or can cause minor personal injury or property damage if the caution is ignored.

Additional precautionary statements (“IMPORTANT” and “NOTE”) are followed by specific instructions.

IMPORTANT: The word “IMPORTANT” is used to inform the reader of specific procedures where minor machine damage will occur if the procedure is not followed.

NOTE: The word “NOTE” is used to communicate installation, operation, maintenance or servicing information that is important but not hazard related.

Important Safety Instructions

WARNING

To reduce the risk of fire, electric shock, serious injury or death to persons when using your washer, follow these basic precautions:

W023

1. Read all instructions before using the washer.
2. Refer to the GROUNDING INSTRUCTIONS in the INSTALLATION manual for the proper grounding of the washer.
3. Do not wash textiles that have been previously cleaned in, washed in, soaked in, or spotted with gasoline, kerosene, waxes, cooking oils, dry-cleaning solvents, or other flammable or explosive substances as they give off vapors that could ignite or explode.
4. Do not add gasoline, dry-cleaning solvents, or other flammable or explosive substances to the wash water. These substances give off vapors that could ignite or explode.
5. Under certain conditions, hydrogen gas may be produced in a hot water system that has not been used for two weeks or more. HYDROGEN GAS IS EXPLOSIVE. If the hot water system has not been used for such a period, before using a washing machine or combination washer-dryer, turn on all hot water faucets and let the water flow from each for several minutes. This will release any accumulated hydrogen gas. The gas is flammable, do not smoke or use an open flame during this time.
6. Do not allow children to play on or in the washer. Close supervision of children is necessary when the washer is used near children. This is a safety rule for all appliances.
7. Before the washer is removed from service or discarded, remove the door to the washing compartment.
8. Do not reach into the washer if the wash drum is moving.

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9. Do not install or store the washer where it will be exposed to water and/or weather.
10. Do not tamper with the controls.
11. Do not repair or replace any part of the washer, or attempt any servicing unless specifically recommended in the user-maintenance instructions or in published user-repair instructions that the user understands and has the skills to carry out.
12. To reduce the risk of an electric shock or fire, DO NOT use an extension cord or an adapter to connect the washer to the electrical power source.
13. Use washer only for its intended purpose, washing textiles.
14. Never wash machine parts or automotive parts in the machine. This could result in serious damage to the basket.
15. ALWAYS disconnect the washer from electrical supply before attempting any service. Disconnect the power cord by grasping the plug, not the cord.
16. Install the washer according to the INSTALLATION INSTRUCTIONS. All connections for water, drain, electrical power and grounding must comply with local codes and be made by licensed personnel when required.
17. To reduce the risk of fire, textiles which have traces of any flammable substances such as vegetable oil, cooking oil, machine oil, flammable chemicals, thinner, etc., or anything containing wax or chemicals such as in mops and cleaning cloths, must not be put into the washer. These flammable substances may cause the fabric to catch on fire by itself.
18. Do not use fabric softeners or products to eliminate static unless recommended by the manufacturer of the fabric softener or product.
19. Keep washer in good condition. Bumping or dropping the washer can damage safety features. If this occurs, have washer checked by a qualified service person.
20. Replace worn power cords and/or loose plugs.
21. Be sure water connections have a shut-off valve and that fill hose connections are tight. CLOSE the shut-off valves at the end of each wash day.
22. Loading door MUST BE CLOSED any time the washer is to fill, tumble or spin. DO NOT bypass the loading door switch by permitting the washer to operate with the loading door open.
23. Always read and follow manufacturer's instructions on packages of laundry and cleaning aids. Heed all warnings or precautions. To reduce the risk of poisoning or chemical burns, keep them out of the reach of children at all times (preferably in a locked cabinet).
24. Always follow the fabric care instructions supplied by the textile manufacturer.
25. Never operate the washer with any guards and/or panels removed.
26. DO NOT operate the washer with missing or broken parts.
27. DO NOT bypass any safety devices.
28. Failure to install, maintain, and/or operate this washer according to the manufacturer's instructions may result in conditions which can produce bodily injury and/or property damage.

NOTE: The WARNINGS and IMPORTANT SAFETY INSTRUCTIONS appearing in this manual are not meant to cover all possible conditions and situations that may occur. Common sense, caution and care must be exercised when installing, maintaining, or operating the washer.

Any problems or conditions not understood should be reported to the dealer, distributor, service agent or the manufacturer.

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WARNING

This machine must be installed, adjusted, and serviced by qualified electrical maintenance personnel familiar with the construction and operation of this type of machinery. They must also be familiar with the potential hazards involved. Failure to observe this warning may result in personal injury and/or equipment damage, and may void the warranty.

SW004

CAUTION

Ensure that the machine is installed on a level floor of sufficient strength and that the recommended clearances for inspection and maintenance are provided. Never allow the inspection and maintenance space to be blocked.

SW020

CAUTION

Be careful around the open door, particularly when loading from a level below the door. Impact with door edges can cause personal injury.

SW025

WARNING

Never touch internal or external steam pipes, connections, or components. These surfaces can be extremely hot and will cause severe burns. The steam must be turned off and the pipe, connections, and components allowed to cool before the pipe can be touched.

SW014

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Safety Decals

Safety decals appear at crucial locations on the machine. Failure to maintain legible safety decals could result in injury to the operator or service technician.

To provide personal safety and keep the machine in proper working order, follow all maintenance and safety procedures presented in this manual. If questions regarding safety arise, contact the manufacturer immediately.

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Operation

Model Identification

Information in this manual is applicable to these models:

UW35VV*
UW60VV*
UW80VV*
UW100VV*
UW125VV*

*This manual applies to models with U7 or U8 in the 8th and 9th or 9th and 10th positions in the model number (e.g., UW60VVXU70001).

This manual is designed as a guide to operating and maintaining the pocket hardmount washer-extractor equipped with the V-computer and AC inverter drive.

The manuals, installation instructions, and wiring diagrams which accompany the machine have been included with the machine at no charge. Additional copies are available at a nominal charge.

NOTE: Read this manual thoroughly before attempting to operate the machine.

NOTE: Do not use this manual in conjunction with earlier model computer-controlled machines. Do not use technical literature intended for earlier models when operating this machine.

NOTE: All information, illustrations, and specifications contained in this manual are based on the latest product information available at the time of printing. We reserve the right to make changes at any time without notice.

Customer Service

If literature or replacement parts are required, contact the source from which the machine was purchased or contact Alliance Laundry Systems LLC at (920) 748-3950 for the name and address of the nearest authorized parts distributor.

For technical assistance, call any of the following numbers:

(920) 748-3121
Ripon, Wisconsin
www.comlaundry.com

A record of each machine is on file with the manufacturer. Always provide the machine's serial number and model number when ordering parts or when seeking technical assistance.

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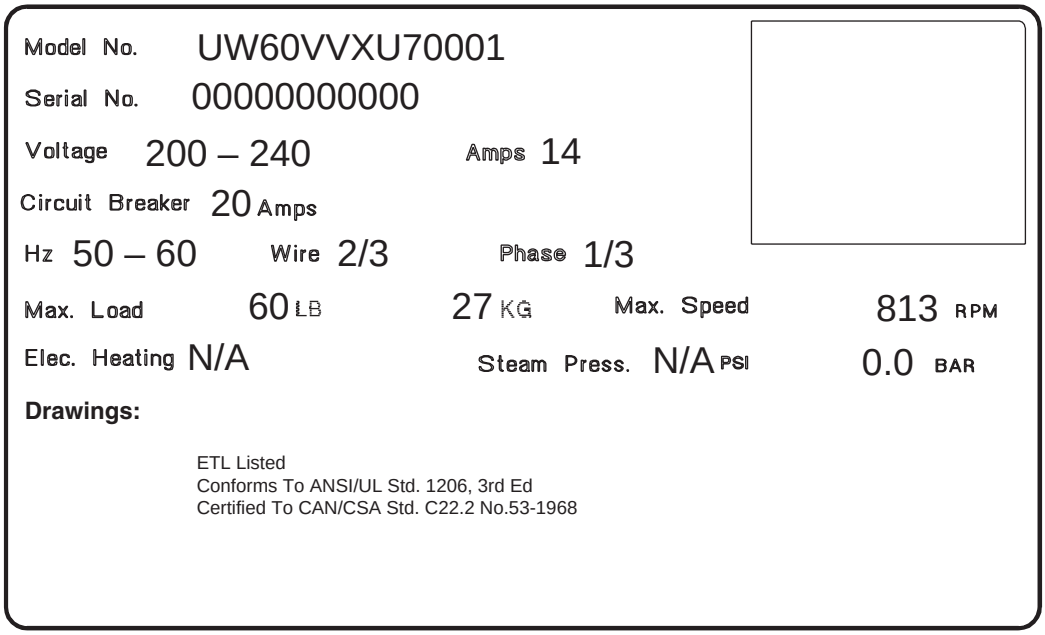
Model Number Familiarization Guide	
Sample Model Number: **UW60VVXU70001**	
UW	Model Number Prefix
60	Washer-Extractor Capacity (pounds dry weight of laundry)
V	Type of Electrical Control
V	Washer-Extractor Speed Capabilities
X	Electrical Characteristics
7	Design Series
0001	Option Identification (varies from machine to machine)



EXAMPLE OF NAMEPLATE

PHM628N

Figure 1

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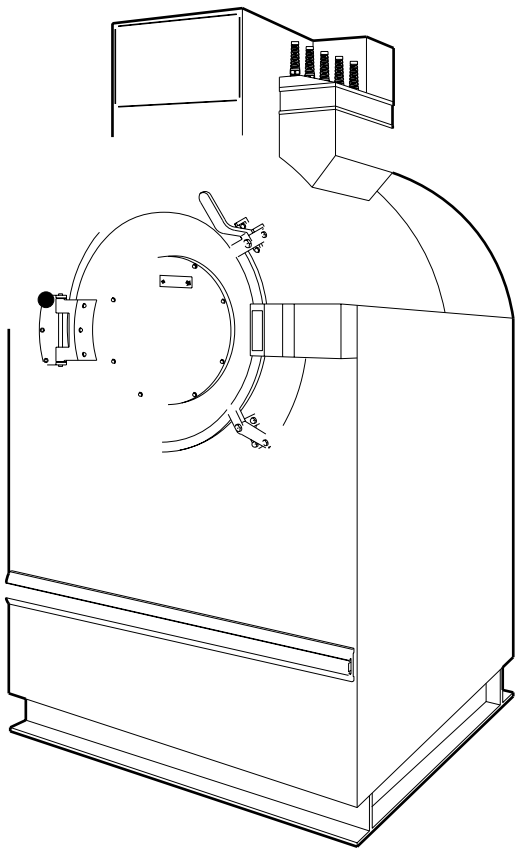
Machine Familiarization Guide

The machine familiarization guide in *Figure 2* identifies the major operational features of the machine.



P005I

1	Emergency Stop Button	**8**	Side Panel
2	Supply Valve Box	**9**	Front Panel
3	Supply Dispenser	**10**	Rub Rail
4	Door Handle	**11**	Shell Front
5	Door Box	**12**	Door Hinge
6	Door Latch Extension Arm	**13**	Door
7	Door Latch	**14**	Control Module

Figure 2

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Theory of Operation

The design of the machine emphasizes performance reliability and long service life. The cylinder, shell, and main body panels are fabricated of stainless steel.

The cylinder is driven by a belt-drive system supported via the shaft by two flange-mounted spherical roller bearings bolted to the A-frame. The UW35 uses a trunion.

The machine uses one motor to drive the cylinder via a V-belt drive in all speeds.

A door-lock system prevents opening of the stainless steel door when water is in the machine. It also prevents operation of the machine when the door is open.

Electrically operated drain valves are used to retain the water and wash solution in the machine during the wash and fill steps. The drain valve closes when power is applied and opens when power is removed, allowing the machine to drain in the event of a power failure.

The cylinder is designed with lifters or ribs that lift the garments from the wash solution when the cylinder rotates at slow speed and allow the garments to tumble back into the solution. The cylinder is perforated, allowing the water to pass through and drain from within during the wash process and extract.

Electrical controls for the machine are housed in a separate enclosure located underneath the top cover of the machine.

There are two possible load balance systems, the “AC Inverter Drive Balance Detection” and the “Vibration Safety Switch.”

The balance detection system using the vibration safety switch does not rely on the AC inverter drive and does not attempt to balance the load in a drain step. As the cylinder is spinning at the programmed speed, if the wash load becomes unbalanced, the overtravel limit switch is “tripped” causing the cylinder to slow to a stop. The remaining portion of the cycle is aborted.

The balance detection system using the AC inverter drive uses special balance detection software in conjunction with the V-computer to prevent out-of-balance conditions. When the AC drive detects an unbalanced load during the drain step, the computer will make up to three attempts to balance the load. After the third try the machine spins at a safe speed up to 106 G. As a fail-safe measure, a vibration safety switch is installed.

The machine uses an AC inverter drive control which provides five motor speeds using a single motor. The solid state output board converts motor logic from the V-computer to the correct signals for the AC inverter drive.

The operator can select from among 30 cycles. A special permanent test cycle can be selected to verify proper operation of the machine.

Liquid supplies can be injected directly into the cups by a customer-supplied external chemical supply system. Five hose strain reliefs on top of the supply dispenser facilitate connection to an external supply system. A terminal strip inside a panel on the rear of the control module provides connection points for external supply signals.

V-Computer

The V-computer control is a programmable solid-state control capable of storing and running up to 30 cycles. A detailed description of these cycles can be found in the ***Programming*** section of this manual.

If this machine’s computer has been equipped with special preprogrammed cycles, a separate insert listing these cycles has been included in the resealable plastic bag which contained this manual.

NOTE: Never turn the power off while the computer mode switch is in the Program position. Such action will disorder portions of the programmed data, necessitating reprogramming of some or all of the existing cycles. Always return the mode switch to Run position before turning the power off. Refer to the Programming Manual.

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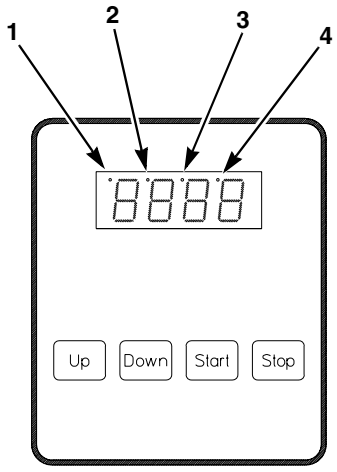
Keypad

Operation of the V-computer control is performed with a four-key touch keypad and LED display located on the front of the machine. Refer to *Figure 3*.



1 Out-of-Balance Condition
2 High Water Level
3 Medium Water Level
4 Low Water Level

Figure 3

Table 1 describes the function of the individual keys when the machine is in Run Mode.

Keypad	
Key	**Description**
Up	Used in cycle selection; pressing this key moves among cycles from smaller to greater.
Down	Used in cycle selection; pressing this key moves among cycles from greater to smaller.
Start	Used to start a cycle.
Stop	Used to stop a cycle.

Table 1

Conditions Monitored by the Computer

- **Door** – The computer continuously monitors the open/locked status of the door. If it detects that the door is open during a wash cycle, it immediately aborts the cycle and executes the stop routine.
- **Power** – If power is interrupted long enough for the computer to go off, after the power is restored, the display flashes “Hold” briefly to indicate the interruption. The door unlock will be disabled to keep the door from being opened while the basket is still turning.
- **Balance** – During a regular cycle, the computer monitors the balance signal provided by the AC drive during drain steps. The computer will attempt to distribute the load three times. The dot at the top of the leftmost display digit will light following the final unsuccessful attempt.
- **Water level** – The computer attempts to maintain the water level programmed for the fill preceding the agitation step. If the level falls below the programmed level, the computer will stop the time countdown and re-energize the fill valves until the level is restored.
- **Water level in a heat step** – In order for the computer to energize the heat output, there must be at least a low water level in the machine. If this minimum level is not detected, the heat output will be turned off until the required level is restored.
- **Temperature probe problem** – If the temperature sensor fails when prompted for degrees Fahrenheit, the computer flashes “tSFL” in Program Mode rather than showing the temperature. If the temperature sensor fails when prompted for degrees Celsius, the display will read “-17C” rather than showing the temperature.

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Table 2 lists the various displays and what they mean. The operator should become familiar with these computer displays.

Display Indications			
Display	**Meaning**	**Display**	**Meaning**
vv01	Program identification code (ROM) Example only.	SPC?	Special test cycle function (if present, ignore)
		Lo	Low water level
Hold	Wait...power has just been turned on.	nEd	Medium water level
CY	Cycle (followed by two-digit number)	HI	High water level
tESt/CYC*	Test cycle selected.	SUP1	Supply 1
FAr	Degrees Fahrenheit	SUP2	Supply 2
CEL	Degrees Celsius	SUP3	Supply 3
HEAt	Auxiliary heat enabled.	SUP4	Supply 4
noHt	Auxiliary heat disabled.	SUP5	Supply 5 (SETUP option)
tFIL	Temperature-controlled fill enabled.	SUP6	Supply 6 (supply 1 and 5)
ntFL	Temperature-controlled fill disabled.	SUP7	Supply 7 (supply 3 and 4)
CooL	Automatic cool-down enabled.	SLo/For**	Gentle wash speed, forward direction
noCL	Automatic cool-down disabled.	SLo/rEv**	Gentle wash speed, reverse direction
Ag 1	Agitation 1 selected (90% agitation).	norn/For	Normal wash speed, forward direction
Ag 2	Agitation 2 selected (33% agitation).	norn/rEv	Normal wash speed, reverse direction
Ag 3	Agitation 3 selected (10% agitation).	drAI	Drain enabled.
Ag 4	Agitation 4 selected (6.7% agitation).	nodr	Drain disabled.
AgSn	Agitation speed normal	dISt	Distribution (load balancing before extract)
AgSL**	Agitation speed low	SPIn/tInE*	Reads “SPIn” for one second, then “tInE” followed by time for spin.
PUnP	Pump output enabled (future use only).		
nPnP	Pump output disabled (future use only).	SPn1	Lowest of three spins
PrE	PreWash segment (1st of 11 segments)	SPn2	Middle of three spins
UASH	Wash segment (2nd of 11 segments)	SPn3	Highest of three spins
FIL1	First fill (3rd of 11 segments)	STOP	Stop routine
FIL2	Second fill (4th of 11 segments)	SdLY	Spin coast delay
FIL3	Third fill (5th of 11 segments)	donE	Cycle and stop routine have ended.
FIL4	Fourth fill (6th of 11 segments)	dFLt	Drive fault detected.
FIL5	Fifth fill (7th of 11 segments)	door	Door not properly closed.
FIL6	Sixth fill (8th of 11 segments)	BAL/door*	Indicates vibration switch or door locked switch tripped during spin.
FIL7	Seventh fill (9th of 11 segments)		
FIL8	Eighth fill (10th of 11 segments)	FILL/STOP*	Programmed water level not reached after 30 minutes.
FIL9	Ninth fill (11th of 11 segments)		
CFIL	Cold fill	FULL	The computer detects low water level or higher when none should be present.
bFIL	Warm fill (both hot and cold)		
HFIL	Hot fill	tSFL	Temperature sensor failure or temperature out of range.
AFIL	Auxiliary fill (SETUP option)	bAL?	Special test cycle function (if present, ignore)

* Display indications separated by a slash represent a flashing display.
** The washer-extractor will operate at normal wash speed regardless of the speed settings.

Table 2

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Start-Up

IMPORTANT: Remove all sharp objects from laundry to avoid tears and rips to items during normal machine operation.

Turn on the main power source (circuit breaker or cut-off switch on the wall).

An identification code will appear for approximately five seconds. Then the display will flash “Hold” briefly.

The display will then read “CY” followed by a two-digit cycle number (01 – 30) to indicate that a cycle can be selected. This display will be shown at all times when power is on between cycles, indicating that the door-unlock solenoid will function if the door-unlock button is pressed. Run the Test Cycle before operating the washer-extractor. Refer to Test Cycle in the Programming Manual. The machine is then ready for loading and unloading.

Opening Door

Press and hold the door-unlock button and pull door handle clockwise.

Loading

CAUTION

Be careful around the open door, particularly when loading from a level below the door. Impact with door edges can cause personal injury.

SW025

Load the machine to full capacity whenever possible, but do not exceed the rated dry-weight capacity of the machine if the fabric to be washed is quite dense, closely woven, and heavily soiled. Overloading can result in an inferior wash. Underloading can result in poor load distribution potentially causing the extract speed to be limited. The operator may need to experiment to determine load size based on fabric content, soil content, and level of cleanliness required.

NOTE: Underloading can cause out-of-balance conditions which shorten life of bearing, seals, basket/shaft assembly, etc.

WARNING

Never operate the machine with a bypassed or disconnected balance system. Operating the machine with severe out-of-balance loads could result in personal injury and serious equipment damage.

SW039

When loading is complete, ensure that all fabric is inside the basket. Then close and lock the door by fully rotating the door handle counterclockwise. The machine should not start or run unless the door is both closed and locked.

CAUTION

Check the door safety interlock daily before the machine is placed in operation.

SW024

NOTE: When washing items which may disintegrate, such as mop heads or sponges, use laundry net bags to prevent drain blockage.

Cycle Selection

NOTE: Press keys at their centers just hard enough to activate them.

Press the Up or Down key until the desired cycle number is displayed. The computer will skip blank (unprogrammed) cycles automatically. Press the Start key to start the cycle. For a more detailed description of the preprogrammed cycles, refer to the cycle charts at the end of the Programming Manual.

If the computer detects that the door is not properly closed when the Start key is pressed, the display will read “door” until the door is closed and locked. Press Start again to begin the desired cycle.

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Cycle Execution

A cycle can be stopped at any time by pressing the Stop key. The machine will go to the stop routine. When the routine is complete, the display shows "donE" until the door is unlocked.

To display the temperature of the water while a cycle is running, press the Up key. To display the number of the cycle in progress, press the Start key.

NOTE: The computer does not count down the remaining cycle time during fills, drains, cool-down, or prior to first achieving the programmed heat temperature when heating. The computer resumes counting down cycle time once the programmed fill level is reached, when the machine has drained, and after a programmed heat temperature is reached.

Each of the 30 cycles consists of 11 segments: PreWash, Wash, and Fills 1 – 9. A description of the various steps in a cycle segment follows:

Fill

After the Start key is pressed, the drain closes and the machine begins filling to the programmed level. Each programmed segment begins with a fill. The display counts down the remaining cycle time in minutes and seconds while the cycle is running.

If a supply is programmed in a step, the supply dispenser will flush during the fill of that segment.

If the machine is connected to an external chemical supply system, the programmed supply will begin 10 seconds into the fill. The supply will remain on until the programmed water level is reached, or until 60 seconds have elapsed, whichever happens first.

If agitation options 1 or 2 are selected for the cycle program, the cylinder will rotate slowly during the fill step. If agitation options 3 or 4 are selected for the cycle program, the cylinder will not rotate during the fill step. Refer to *Table 3* for more information.

If the computer does not receive a signal that water level has been attained within 30 minutes, it will alternately flash "STOP" and "FILL" and sound the on-board beeper for ten seconds. The computer will then initiate the stop routine.

Wash

As soon as water level is reached (and any programmed temperature is reached), the displayed time begins counting down at one-second intervals.

Agitation is active during this portion of the segment. There are four different agitation actions available. Refer to *Table 3* for more information.

Agitation Action Options		
Display	**Description**	**Percentage**
Ag 1	27 seconds forward, 3 seconds pause, 27 seconds reverse, 3 seconds pause	90%
Ag 2	10 seconds forward, 20 seconds pause, 10 seconds reverse, 20 seconds pause	33%
Ag 3	3 seconds forward, 27 seconds pause, 3 seconds reverse, 27 seconds pause	10%
Ag 4	4 seconds forward, 56 seconds pause, 4 seconds reverse, 56 seconds pause	6.7%

Table 3

If the segment contains a heat step, the machine begins heating after the water has reached the programmed level.

NOTE: If the water does not reach the programmed temperature in 40 minutes, the computer progresses to the wash step.

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Drain

If the cycle program segment calls for a drain, the drain valves will open after the programmed segment time has elapsed. If a spin step follows a drain step, the cylinder will turn clockwise (forward) at wash speed for several seconds at the beginning of the drain step. This clockwise direction mirrors the spin rotation and is, therefore, also considered forward.

The cylinder then accelerates to distribution speed to help ensure that the load is evenly distributed. The drains open several seconds later.

NOTE: The machine should drain in 30 seconds. If the machine fails to drain, contact a qualified service technician.

If the cycle program segment does not call for a drain, the computer moves to the next segment of the cycle program. If the segment is at the end of a cycle program, the computer goes into the stop routine.

If the cycle program segment does not call for a spin, the cylinder will continue to turn at wash speed throughout the drain step. When the drain has completed, the computer moves to the next segment of the cycle program. If the segment is at the end of a cycle program, the computer goes into the stop routine.

NOTE: The drain step in the final segment (Fill 9) cannot be skipped.

Spin

After the drain sequence ends, the speed of the cylinder increases to the extract speed *if* the programmed spin time is *not zero*. The displayed time resumes counting down at one-second intervals.

After the programmed spin time has elapsed, the computer moves on to the fill step in the next segment of the cycle. If the spin is at the end of the cycle, the computer begins the stop routine.

Stop Routine

When the computer concludes the wash cycle or when the Stop key is pressed while a cycle is in progress, the computer goes into the stop routine.

The stop routine sequence:

- All inputs are turned off
- A brief pause, allowing the cylinder to coast down if in extract
- Brief rotation counterclockwise at wash speed
- A brief pause
- Brief rotation clockwise at wash speed
- A brief pause
- The display shows “donE”
- The door interlock is energized, allowing the door to be opened

If the stop routine seems excessively long, check for “FULL” message. If this occurs, contact a qualified service technician.

WARNING

NEVER insert hands or objects into basket until it has completely stopped. Doing so could result in serious injury.

SW012

Once “donE” is displayed, open the door by pressing and holding the door-unlock button as described earlier. Once the door is opened, the computer display will show the most recent cycle number.

The machine is now ready to begin another wash cycle.

NOTE: A test cycle is provided as a means of verifying proper machine operation. Refer to the Programming Manual for instructions on running the test cycle.

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Balance Detection

Each machine is equipped with an AC inverter drive balance detection system and a vibration safety switch.

Load balance is monitored by the AC inverter drive during any drain step that immediately precedes a spin step in a regular cycle.

If a spin step follows a drain step, the cylinder accelerates to distribution speed seven seconds into the drain step.

The computer begins monitoring the balance signal from the AC inverter drive soon after the water level drops below low level. If the balance signal indicates that the wash load is evenly distributed, the computer will start the spin step.

If the balance signal indicates that the wash load is unbalanced, the computer will turn off the motor for about four seconds, then will operate the cylinder down to wash speed for seven seconds in an attempt to redistribute the load. The computer will make as many as three attempts if needed.

If on the third attempt the load is not balanced, the machine will light the out-of-balance LED indicator located in the upper left corner of the display (to the left of the first digit) until the drain and following spin conclude. The computer will limit the spin speed to a safe level.

As a fail-safe measure, a vibration safety switch will "trip" during a spin if the wash load becomes severely unbalanced, slowing the cylinder to a stop and aborting the remaining portion of the cycle. The computer display will alternately flash "BAL" "door" until the door is opened.

Motor Thermal Overload Indicator

If the machine is equipped with a small indicator lamp on the side of the control module, it will light to indicate that a thermal overload switch in the motor has shut off the AC power to the computer board, thereby preventing damage to the motor caused by overheating and/or an overload condition. This feature protects and extends the life of the motor.

The thermal overload switch will automatically reset itself after the excessive heat condition has subsided.

Before attempting to restart the washer-extractor, determine the reason for the overload. The following is a partial list of possible problems:

- Washer-extractor not fully drained before spin
- Out-of-balance condition
- Low voltage
- Loss of one phase on a three-phase motor
- Bad bearings
- Air circulation blocked to motor

Contact a service technician to correct serious problems. Failure to take corrective action will ultimately result in damage to the motor and/or the inverter drive.

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Maintenance

Routine maintenance maximizes operating efficiency and minimizes downtime. The maintenance procedures described below will prolong the life of the machine and help prevent accidents.

WARNING

Be careful when handling sheet-metal parts. Sharp edges can cause personal injury. Wear safety glasses and gloves, use the proper tools, and provide adequate lighting.

SW035

CAUTION

Replace all panels that are removed to perform service and maintenance procedures. Do not operate the machine with missing guards or with broken or missing parts. Do not bypass any safety devices.

SW019

Daily, weekly, monthly, and quarterly checklists are provided at the end of this section. Laminate the checklists to preserve them for repeated copying. Operators and technicians are encouraged to add checks specific to their washer-extractor's particular application. Where possible, space is provided on the checklists for this purpose.

The following maintenance procedures must be performed regularly at the required intervals.

Daily

Beginning of Day

1. Inspect water inlet valve hose connections on the back of the washer-extractor for leaks.
2. Inspect steam hose connections for leaks (where applicable).
3. Verify that insulation is intact on all external wires and that all connections are secure. If bare wire is evident, call a service technician.
4. Check door interlock before starting operation:
   a. Attempt to start the washer-extractor with the door open. The washer-extractor should not start with the door open.
   b. Close the door without locking it and attempt to start the washer-extractor. The washer-extractor should not start with the door unlocked.
   c. Close and lock the door and start a cycle. Attempt to open the door while the cycle is in progress. The door should not open.

   If the door lock and interlock are not functioning properly, call a service technician.

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End of Day

1. Clean the AC drive box filters:
   a. Snap off the external plastic cover which contains the filter.
   b. Remove the foam filter from the cover.
   c. Wash the filter with warm water and allow to air dry. Filter can be vacuumed clean.
2. Clean the door gasket of residual detergent and all foreign matter.
3. Clean automatic supply dispenser and lid inside and out with mild detergent. Rinse with clean water.
4. Clean powder dispenser and lid with mild detergent. Rinse with clean water.
5. Clean washer-extractor's top, front, and side panels with mild detergent. Rinse with clean water.
6. Leave loading door open at the end of each day to allow moisture to evaporate.

NOTE: Unload the washer-extractor promptly after each completed cycle to prevent moisture buildup. Leave loading door open at the end of each completed cycle to allow moisture to evaporate.

Weekly

1. Check the washer-extractor for leaks.
   a. Start an unloaded cycle to fill the washer-extractor.
   b. Verify that door and door gasket do not leak.
   c. Verify that the drain valve is operating and that the drain system is free from obstruction. If water does not leak out during the prewash segment, drain valve is closed and functioning properly.

Monthly

NOTE: Disconnect power to the washer-extractor at its source before performing the monthly maintenance procedures.

1. Each month OR after every 200 hours of operation, lubricate bearings. (Locate the bearing lubrication decal at the rear of the left side of the control module, as viewed from the front of the washer-extractor.)

   The grease must have the following characteristics:

   - NLGI Grade 2
   - Lithium-based
   - Water-insoluble
   - Anti-rusting
   - Anti-oxidizing
   - Mechanically stable

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The grease must have adequate base oil viscosity with one of the following ratings:

- ISO VG 150 (135–165 cSt at 40°C or 709–871 SUS at 100°F)
- ISO VG 220 (198–242 cSt at 40°C or 1047–1283 SUS at 100°F)
- An SAE 40 rating is also acceptable as long as the cSt or SUS values are within the specified ranges.

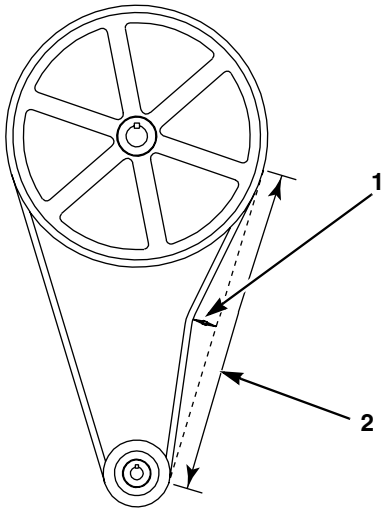
Pump the grease gun slowly, permitting only two strokes.

2. Clean the AC drive cooling fins:
   a. Remove the AC drive box cover.
   b. Blow the fins clean using compressed air at a pressure of 60 – 90 psi or canned compressed air. Use care to avoid damaging cooling fan or other components.

NOTE: No amount of visible foreign matter should be allowed to accumulate on the fins or the finger guard.

3. Use the following procedures to determine if belts require replacement or adjustment. Call a qualified service technician in either case.
   a. Check belts for uneven wear and frayed edges.
   b. After disconnecting power to the washer-extractor and removing all panels necessary for access to the drive belt, use one of the following methods to verify that belts are properly tensioned:
      - **Tension Gauge.** Belt tension measurements should be taken as close to the center of the belt span as possible. Measurements can be performed with the Belt Tension Checker. Make adjustments for the motor pulley diameter and belt type on the machine.

        If belt tension adjustment is required, loosen motor mounting bolts and slide motor along motor plate to change the belt tension. Retighten motor mounting bolts before verifying belt tension.
      - **Deflection.** Refer to *Figure 4*. Loosen motor mounting bolts and slide motor along motor plate to change belt span length. Belt tension measurements should be taken as close to the center of the belt span as possible. For every inch of belt span length, the belt should deflect 1/64 of an inch, or 0.40 millimeter, with an exerted force of 5.25 pounds for a new belt or 3.5 pounds for a used belt. A belt with a span length of 20 inches should deflect 20/64 of an inch, or 7.8 millimeters. The belt(s) should be as loose as possible without allowing slippage during peak load condition. An initial (run-in) force of 7 lbs. should be used to set the belt tension. An operating (normal) force of 5 lbs. should be used after the washer-extractor has been operated for a few hours.



1 Deflection
2 Span Length

Figure 4

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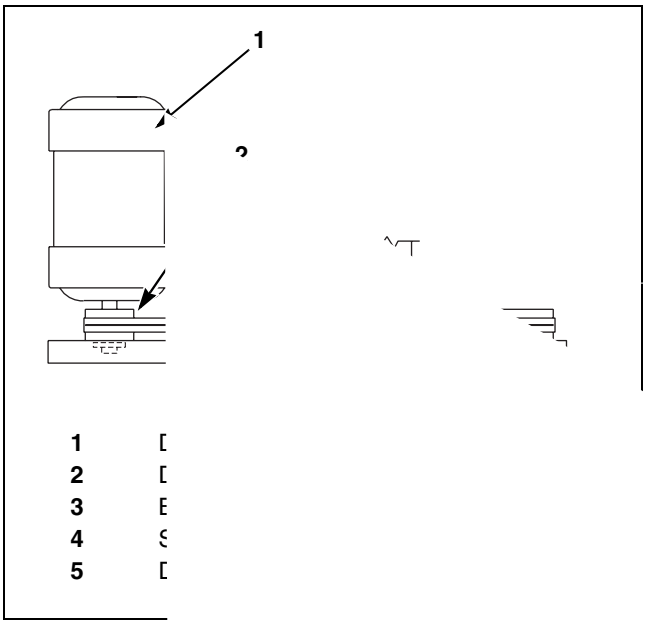
c. Verify that belts are properly aligned by checking pulley alignment. Place a straightedge across both pulley faces. The straightedge should make contact with the pulleys in four places. Refer to *Figure 5*.



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9. Clean interior of washer-extractor, both basket and shell, by wiping with a water-soaked sponge or cloth.
10. Use compressed air to ensure that all electrical components are free of moisture and dust.
11. Remove chemical supply components and check for residual chemicals. Clean as necessary and replace.

Quarterly

NOTE: Disconnect power to the washer-extractor before performing the quarterly maintenance procedures.

1. Tighten door hinges and fasteners, if necessary.
2. Tighten anchor bolts, if necessary.
3. Verify that the drain motor shield is in place and secure.

all painted surfaces for bare metal.
ray paint is available from the

ving, paint with primer or

andpaper or
primer

Care of Stainless Steel

Maintain the natural beauty of stainless steel and prolong its service life by following these tips:

- Ordinary deposits of dirt and grease can be removed with detergent and water. The metal should be thoroughly rinsed and dried after washing. Periodic cleaning will help to maintain the bright surface appearance and prevent corrosion.
- Contact with dissimilar metals should be avoided whenever possible. This will help prevent galvanic corrosion when salty or acidic solutions are present.
- Salty or acidic solutions should not be allowed to evaporate and dry on stainless steel. They may cause corrosion. Ensure that the stainless steel is wiped clean of acidic solution residues.
- Deposits that adhere to the stainless steel should be removed, especially from crevices and corners. When using abrasive cleaners, always rub in the direction of the polish lines or “grain” of the stainless steel to avoid scratch marks. Never use ordinary steel wool or steel brushes on the stainless steel. Use stainless steel wool or soft non-metal bristle brushes.
- If the stainless steel appears to be rusting, the source of the rust may actually be an iron or steel part not made of stainless steel, such as a nail or screw. One remedy is to paint all carbon steel parts with a heavy protective coating. Stainless steel fasteners should be used whenever possible.
- Discolorations or heat tint from overheating may be removed by scouring with a powder or by employing special chemical solutions.
- Sanitizers or sterilizing solutions should not be left in stainless steel equipment for prolonged periods of time. They often contain chlorine, which may cause corrosion. The stainless steel should be cleaned and rinsed thoroughly of any solution containing chlorine.
- When an external chemical supply system is used, make certain that no siphoning of chemicals occurs when the washer-extractor is not in use. Highly concentrated chemicals can cause severe damage to stainless steel and other components within the washer-extractor. Damage of this kind is not covered by the manufacturer’s warranty. Locate the pump below the washer-extractor’s injection point to prevent siphoning of chemicals into the washer-extractor. Refer to the chemical injection supply system in the Installation Manual.

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Daily Preventive Maintenance Checklist

Machine _____	Week Of: _____						
Operator _____	Days						
Checks	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Observe All Safety Warnings! **Disconnect power to the washer-extractor before performing the daily maintenance procedures.**							
Beginning of Day							
1. Inspect water inlet valve hose connections on the back of the washer-extractor for leaks.							
2. Inspect steam hose connections for leaks (where applicable).							
3. Verify that insulation is intact on all external wires and that all connections are secure.							
4. Check door lock and interlock before starting operation:							
a. Attempt to start the washer-extractor with door open.							
b. Close the door without locking it and attempt to start the washer-extractor.							
c. Close and lock the door, start a cycle, and attempt to open the door while the cycle is in progress.							
End of Day							
1. Clean the AC drive box filters.							
2. Clean the door gasket of all foreign matter.							
3. Clean automatic supply dispenser and lid.							
4. Clean the washer-extractor's top, front, and side panels.							
5. Leave loading door open at the end of each day to allow moisture to evaporate.							
NOTE: Unload the washer-extractor promptly *after each completed cycle* to prevent moisture buildup. **NOTE: Leave loading door open *after each completed cycle* to allow moisture to evaporate.**							

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Weekly Preventive Maintenance Checklist

Machine _____	Month _____				
Operator _____	Week Ending:				
Checks	/	/	/	/	/
Observe All Safety Warnings! **Disconnect power to the washer-extractor before performing the weekly maintenance procedures.**					
1. Check the washer-extractor for leaks:					
a. Start an unloaded cycle to fill the washer-extractor.					
b. Verify that door and door gasket do not leak.					
c. Verify that the drain valve is operating.					
2.					
3.					
4.					
5.					
6.					
7.					

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Monthly Preventive Maintenance Checklist

Machine _____ Operator _____	Month			
Checks				
Observe All Safety Warnings! **Disconnect power to the washer-extractor before performing the monthly maintenance procedures.**				
1. **Each month OR after every 200 hours of operation**, lubricate bearings.				
2. Clean the AC drive fins.				
3. Determine if belts require replacement or adjustment:				
a. Check belts for uneven wear and frayed edges.				
b. Verify that belts are properly tensioned.				
c. Verify that belts are properly aligned.				
4. Remove back panel and check hoses for leaks.				
5. Check supply dispenser hoses and connections.				
6. Clean inlet hose filter screens. Replace if worn or damaged.				
7. Tighten motor mounting bolt locknuts and bearing bolt locknuts, if necessary.				
8. Use compressed air to clean lint from motor.				
9. Clean interior of washer-extractor, both basket and shell, by wiping with a water-soaked sponge or cloth.				
10. Use compressed air to clean moisture and dust from all electrical components.				
11.				
12.				
13.				
14.				

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Quarterly Preventive Maintenance Checklist

Machine _____ Operator _____	Quarter			
Checks				
Observe All Safety Warnings! **Disconnect power to the washer-extractor before performing the quarterly maintenance procedures.**				
1. Tighten door hinges and fasteners, if necessary.				
2. Tighten anchor bolts, if necessary.				
3. Verify that the drain motor shield is in place and secure.				
4. Check all painted surfaces for bare metal. Repair, if necessary.				
5. Clean steam filter, if applicable.				
6. Check vibration safety switch gap setting to switch function.				
7.				
8.				
9.				
10.				
11.				

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Notes

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Removal from Service

Decommissioning

In the event that the machine must be decommissioned, follow these steps:

1. Remove the chemical injection supply system, if applicable.
   a. Have a qualified electrician disconnect power to the chemical injection supply system at its source.
   b. Using the manufacturer's instructions, carefully remove the chemical injection supply system from the machine. Make certain that no chemical supplies come into contact with skin or clothing.
2. Clean interior of machine, both basket and shell.
   a. Flush supply dispenser (soap dish) with water.
   b. Run a short rinse cycle to clean detergent and chemical residues from the interior of the machine.
3. Disconnect electrical power.
   a. Shut off main power supply at the breaker box or main control panel.
   b. Do not attempt to disconnect power supply wires from power supply. Have a qualified electrician disconnect power to machine and reuse unit, if applicable, at its source.
4. Disconnect hoses.
   a. Disconnect drain hose from sump, gutter, or drain.
   b. Turn off water supply. Disconnect individual hot and cold water inlet hoses from the machine.
   c. Allow time for residual water in the machine to drain. Then disconnect drain hose from the machine.
5. Disconnect steam hose, if applicable.
   a. Turn off steam supply and allow time for the valve to cool.
   b. Disconnect steam hose from machine.
6. Remove the washer-extractor from its foundation pad.
   a. Keep all panels in place to provide stability when moving the machine.
   b. Verify that door is closed and secure.
   c. Loosen and remove anchor bolts holding machine base to floor.
   d. Break the grout seal at each corner of the machine, using a crowbar.
   e. Use crowbars at the front corners to lift the machine a few inches so that the forks of a forklift truck can reach under the machine.
   f. Bolting the base frame to a pallet will facilitate removal to a transport vehicle.

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